Appendix C

National Historic Preservation Act Section 106 Consultation with New York State Historic Preservation Office

U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

MAR - 5 2013

Ms. Beth A. Cumming
Historic Site Restoration Coordinator Historic Preservation Field Services
New York State Office of Parks, Recreation, and Historic Preservation
Peebles Island Resource Center
1 Delaware Avenue
Cohoes, NY 12047

RE: Amtrak Right of Way Preservation
Concrete Casing in the Hudson Yards
New York City, New York County, NY

Dear Ms. Cumming:

The Federal Railroad Administration (FRA) is notifying your agency that the National Railroad Passenger Corporation (Amtrak) anticipates receiving Federal funding to preserve an underground right of way by constructing a concrete casing (Project) under the existing Hudson Yards located in New York, New York. This Project is proposed in support of Amtrak's efforts to reduce the risk of damage from future disasters in the Northeast Corridor. Pursuant to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800) "Protection of Historic Properties (Section 106)," this letter is being transmitted to initiate the Section 106 consultation process for the Project.

Amtrak has enlisted URS Corporation (URS) to assist with environmental and Cultural Resources Management (CRM) services required for the development of an Environmental Assessment (EA) for the Project. The URS CRM team, located in Germantown, Maryland, undertook investigations to determine the presence of historic and above-ground properties and archaeological sites, defined as those that are listed or eligible for listing in the National Register of Historic Places (NRHP) in the Project area. All work was conducted or directed by staff that meet the *Secretary of the Interior's Professional Qualification Standards* (36 CFR Part 61) in Architectural History, History, and Archaeology. Résumés for Project personnel are available upon request.

Project Background

A number of studies, including Amtrak's *Northeast Corridor Infrastructure Master Plan*, project a significant increase in Amtrak and New Jersey Transit ridership across the Hudson River by the year 2030 and the need for expansion of commuter and intercity train services into Penn Station.[1] The existing 100-year-old, two-track tunnels under the Hudson River operate at maximum capacity – approximately 25 trains per hour per direction – and are insufficient to meet the projected demand. Given this projected and inevitable demand for increased service and the continued need to support alternatives in the transportation infrastructure that reduce damage

[1] See also, *The Amtrak Vision for the Northeast Corridor 2012 Update Report*; *A Vision for High-Speed Rail in the Northeast Corridor*; The Northeast Corridor Future Program Studies.

from future natural disasters in the Northeast Corridor, Amtrak anticipates it will ultimately need to tunnel and construct additional train tracks under the Hudson River between New Jersey and Penn Station in New York.

A real estate development corporation, under an agreement with LIRR and MTA, proposed plans to develop the area above the Hudson Yards. Construction of part of this development (referred to as the overbuild project) started in December 2012 in the southern portion of the Hudson Yards Eastern Rail Yard (south of proposed Project site). The overbuild project involves constructing a platform (the overbuild platform) above the Hudson Yards that will provide the footprint for commercial and residential development. Placement of significant support structures for the overbuild platform – some of which are planned in the location of the proposed concrete casing – is projected to start in mid-2013. There are currently numerous physical limitations for constructing a tunnel under Hudson Yard, which will be further compounded by the construction of the overbuild project. The proposed right of way beneath the overbuild project is one of the only currently identified viable locations that can be used to construct a new tunnel into Penn Station. If the overbuild project is designed and constructed without preserving this location, the option to construct a future tunnel in this underground space would be infeasible. Therefore, it is important that the structural concrete casing is built prior to construction of the overbuild platform support structures, so that the right of way is preserved for future consideration.

Description of the Undertaking

The undertaking involves the construction of a concrete casing (i.e., a structural box) limited to an 800-foot long section under the LIRR Hudson Yards in Midtown Manhattan. The general Project area is defined by Twelfth and Tenth Avenues to the west and east, and West 33rd Street and West 30th Street serve as the north and south boundaries (Attachment 1). The proposed action components would occur in the area defined by Eleventh Avenue, between 33rd Street and 30th Street, to Tenth Avenue (Attachment 2). The concrete casing would be approximately 50 feet wide and 30 feet high. The depth of the concrete casing would range from 60 feet below ground surface at Eleventh Avenue to 35 feet below ground surface at Tenth Avenue. The trench for the concrete casing would be dug into urban fill, native soils, and bedrock, respectively, from the ground surface down. The approximate top of the bedrock varies along the alignment, but the entire floor of the tunnel would rest on bedrock and a majority of the sidewalls would abut bedrock (Attachment 3). Additional location and construction details regarding the undertaking are summarized in Attachment 4 and enclosed plans.

Areas of Potential Effects

As defined in 36 CFR § 800.16(d), the Area of Potential Effects (APE) means "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking."

Because elements of the Project have the potential to create effects on both above-ground resources and archaeological sites, two APEs have been developed–one for above-ground resources and one for archaeological resources. The APEs for this Project are depicted in Attachment 5.

The archaeological APE was developed for areas where subsurface ground disturbance associated with the Project would occur. Substantial disturbance would occur in the Work Zone in the east half of the Hudson Yards, between Eleventh and Tenth Avenues and 30th and 33rd Streets. In

addition, the construction staging area is included in the archaeological APE. The staging area is north of 30th Street, south of an existing access road, west of the Eleventh Avenue and east of Twelfth Avenue (Attachment 2). This area would contain heavy construction equipment, which may have the potential to impact archaeological resources, if present.

The above-ground APE is defined as an area 90 feet beyond the boundaries of the Work Zone and the construction staging area. The completed Project would be entirely underground. The buffer of 90 feet beyond the Work Zone and construction staging area (Attachment 5) is the distance that any development or alteration must comply with New York City Building Code *Technical Policy and Procedure Notice* (TPPN) #10/88 that "requires a monitoring program to reduce the likelihood of construction damages to adjacent historic structures and to detect at an early stage the beginnings of damage so that construction procedures can be changed."

Historic Properties, Archaeological Resources, and Determination of Effects

FRA has evaluated the Project area pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR Part 800, "Protection of Historic Properties") and determined the following historic properties are located in the Above-ground APE:

> *The High Line Freight Railroad viaduct in the vicinity of Tenth Avenue from Gansevoort Street to W. 34th Street (High Line)*
>
> *New York Improvement and Tunnel Extension of the Pennsylvania Railroad from NJ to Manhattan to Long Island City, Queens (Hudson River Tunnels)*

There is no potential for precontact or prehistoric archaeological resources within the Project area. The probability of encountering undisturbed prehistoric archaeological sites in this highly developed area of Manhattan is extremely minimal. The potential for historic archaeological resources within the Project area is diminished by the area having functioned as a rail yards since the 1860s. Although maps of this period show railroad-related buildings such as a freight depot, car shop and a roundhouse, there has been no indication in the archaeological record of foundations associated with these structures. There has been extensive construction and continuous ground disturbance in the Project archaeological APE. As described in detail in Attachment 6, the potential for archaeological resources has been assessed in this area by various other project studies indicating the site has no archaeological sensitivity. Therefore, FRA has determined that there is low historic and prehistoric archaeological potential for the Project. The proposed undertaking, thus, is not expected to affect significant archaeological resources.

For the historic or above ground properties, FRA assessed the Project and the construction activities potential for affecting the historic resources. The completed Project would be entirely underground and would have no visual impact on the surrounding buildings or environment. Construction activities that could potentially affect adjacent architectural resources include the following:

- Possible vibration effects during construction from drill-and-blast excavation for access and ventilation shafts, subway station caverns, rail interlocking chambers, and ancillary space.

- Cut-and-cover construction activities as the means of concrete casing construction. The possible effects of these activities could include ground vibrations from construction

equipment, accidental damage by construction equipment, and possible structural damage as a result of settlement or other changes to foundation conditions.

Although construction activities such pile driving, caisson drilling, and bulldozing have the potential to inadvertently damage adjacent historic above-ground cultural resources, FRA would require implementation of protection measures as part of Amtrak's construction specifications to avoid accidental construction damage. These measures to protect historic resources are strongly suggested pursuant to 36 CFR Part 800, and are consistent with New York City Building Code, Department of Building Technical Policy and Procedure Notice (TPPN) #10/88, which "requires a monitoring program to reduce the likelihood of construction damages to adjacent historic structures and to detect at an early stage the beginnings of damage so that construction procedures can be changed."

According to New York City code, this monitoring requirement only applies to designated NYCL and S/NR-listed properties within 90 feet of a lot under development or alteration. The Hudson River Tunnels and the High Line have been only been determined eligible for listing in the S/NR; however, construction monitoring consistent with TPPN #10/88 is recommended by the 2012 geotechnical engineering study by Langan Engineering & Environmental Services, Inc. This study "anticipates at a minimum … the High Line will require monitoring." This monitoring "may include optical surveying, seismographs (vibration monitoring), crack gauges and borehole instruments such as inclinometers or pressure cells." The segments of the Hudson River Tunnels that are approximately 60 feet north of the Project Work Zone in the East Rail Yard should be monitored in the same manner.

It is possible that temporary, adverse indirect impacts on the context or visual setting of some historic architectural and structural resources could result during construction. Construction activities that would be visible from street level could result in temporary visual obstructions created by machinery and other construction equipment and result in temporary loss of context for the architectural resources nearby. However, any such impacts would only be temporary and indirect, and only last the duration of the construction period.

FRA has evaluated this Project pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR Part 800, "Protection of Historic Properties") and has determined that the proposed Project would have No Adverse Effect on the following historic properties:

The High Line Freight Railroad viaduct in the vicinity of Tenth Avenue from Gansevoort Street to W. 34th Street (High Line)

New York Improvement and Tunnel Extension of the Pennsylvania Railroad from New Jersey to Manhattan to Long Island City, Queens(Hudson River Tunnels)

FRA reached this conclusion after considering available documentation located in the files of the New York State Historic Preservation Office, the 2004 Final General Environmental Impact Statement (EIS) for the Hudson Yards Special Development District, the 2008 EIS for the West Yard Development Project and using data gathered during a field investigation that took place in January 2013. This evaluation was conducted or directed by an architectural historian and archaeologist who meet the requirements of the *Secretary of the Interior's Professional Qualification Standards* (36 CFR Part 61) in their respective disciplines.

FRA is seeking concurrence from the New York State Office of Parks, Recreation, and Historic Preservation with this finding of No Adverse Effect and recommendation for monitoring pursuant

to 36 CFR 800.5(c)(1). FRA would appreciate an expedited response from your office given the nature and schedule of this project. FRA may consider a lack of response within 30 calendar days as concurrence with the above finding, as provided for in 36 CFR 800.5(c)(1).

In the event that your office disagrees with our finding, please notify us via overnight or private delivery service to ensure timely receipt of your communications.

If you have questions or wish to discuss this Project further, please contact Michelle Fishburne, the region Environmental Protection Specialist, at (202) 493-0398 or by email at michelle.fishburne@dot.gov.

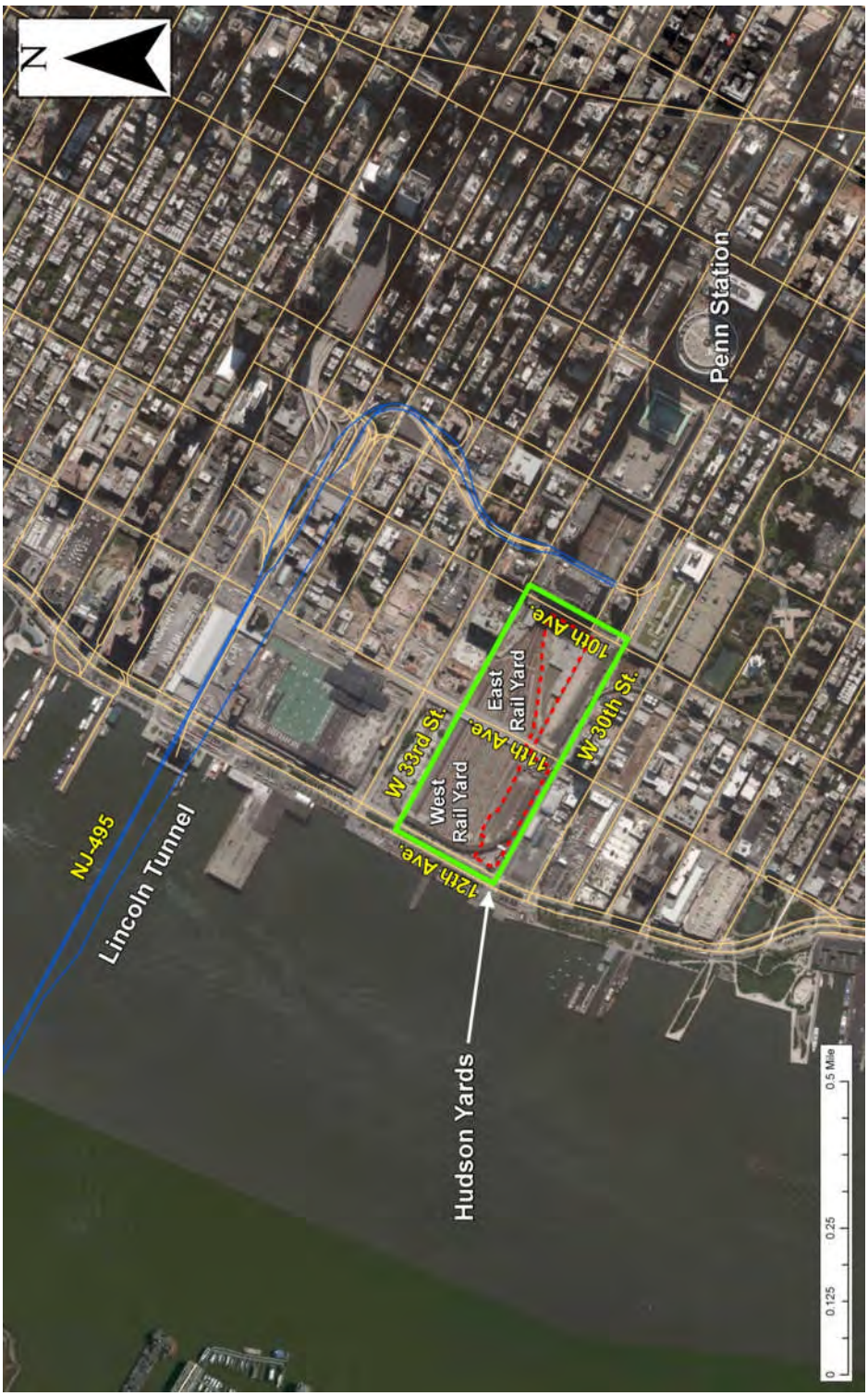
Sincerely,

David Valenstein
Chief, Environmental & Systems Planning System

enclosures

cc: Michelle W. Fishburne, FRA
Kenneth W. Hanson, Amtrak
Marilyn Jamison, Amtrak
Drew Galloway, Amtrak
Michael Stern, Amtrak
Mark Edwards, URS

Attachment 1



Project Location Map

Hudson Yards
Project Location
NJ-495
Roads

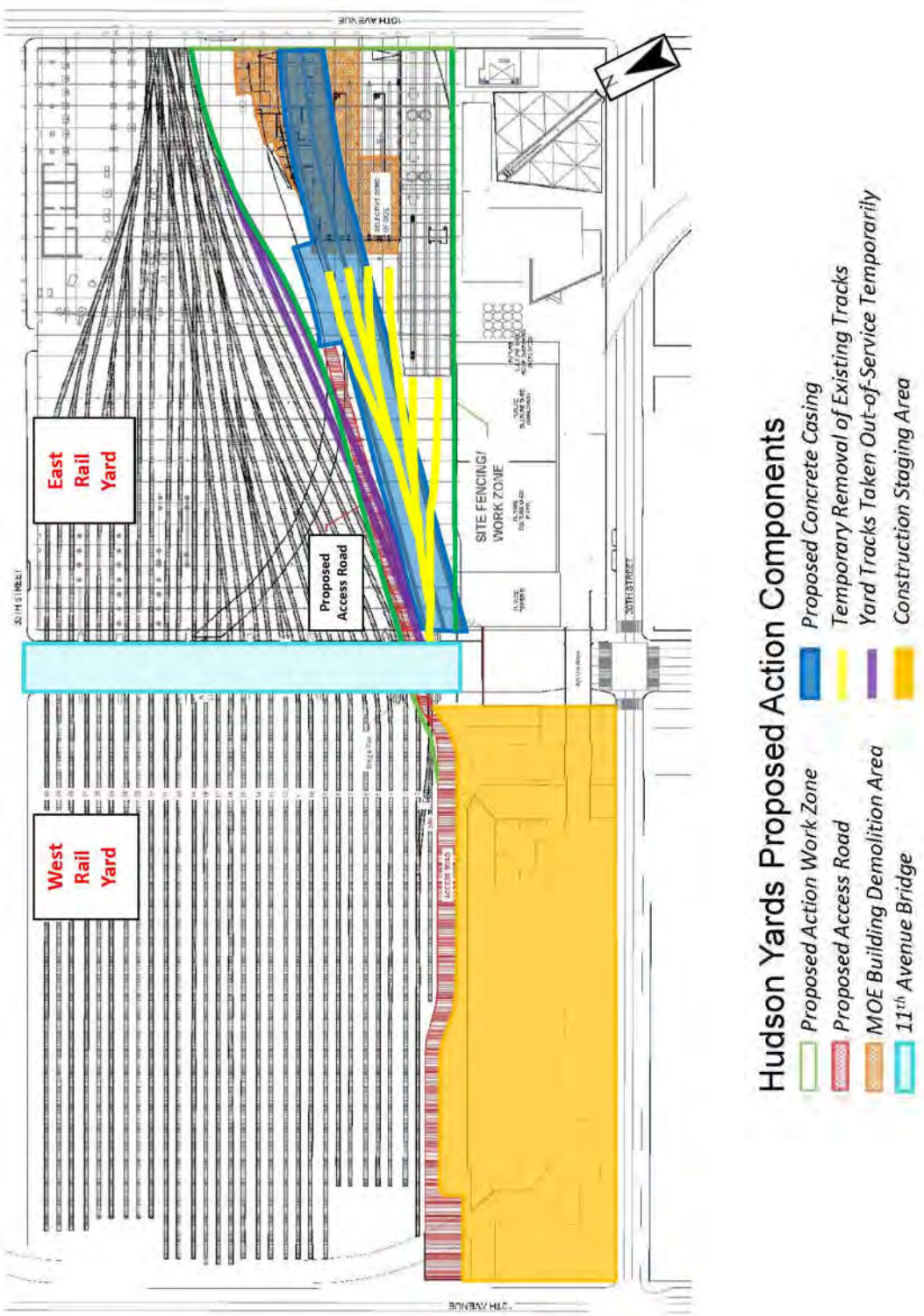
PROJECT	Concrete Casing in the Hudson Yards
SCALE	N/A
SOURCE	Amtrak Gateway Project – Hudson Yards Study, Tutor Perini Corporation/Parson Brinckerhoff, Nov. 16, 2012

Attachment 1

URS

PROJECT NO. 15303391

Attachment 2



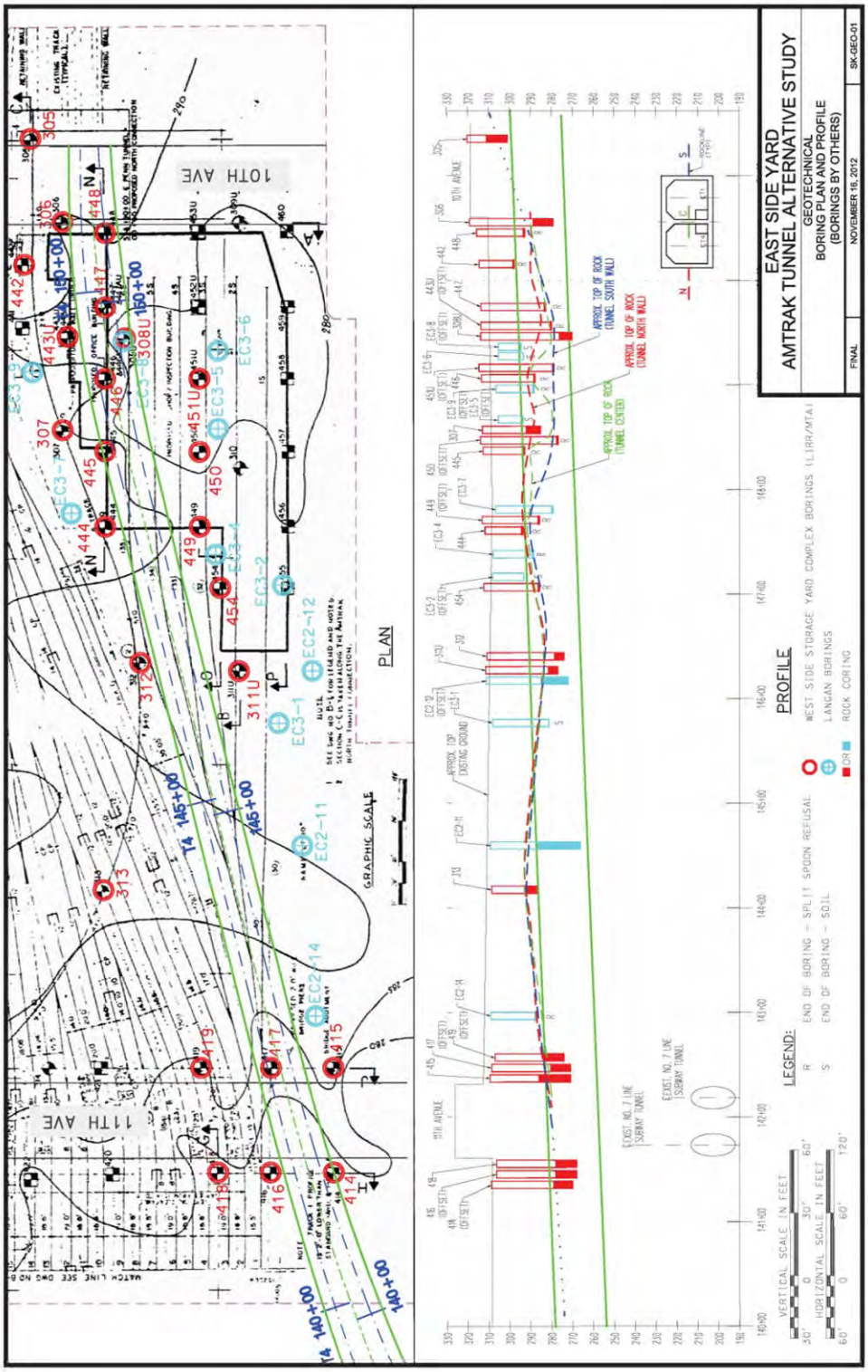
PROJECT	Concrete Casing in the Hudson Yards
SCALE	N/A
SOURCE	Amtrak Gateway Project – Hudson Yards Study, Tutor Perini Corporation/Parson Brinckerhoff, Nov. 16, 2012

Attachment 2

URS

PROJECT NO. 15303391

Attachment 3



PROJECT Concrete Casing in the Hudson Yards	**Attachment** 3
SCALE 1' = 60'	
SOURCE Amtrak Gateway Project – Hudson Yards Study, Tutor Perini Corporation/ Parson Brinckerhoff, Nov. 16, 2012	URS
	PROJECT NO. 15303391

Attachment 4

ATTACHMENT 4 - Undertaking Location and Construction Information

Amtrak Right of Way Preservation
Concrete Casing in the Hudson Yards
New York City, New York County, NY

During construction, the primary access to the Project site would be the existing access road off Twelfth Avenue, which roughly parallels 30th Street and continues under the Eleventh Street Viaduct to the project site (see Attachment 2 of Section 106 letter). Staging areas would be limited to the areas adjacent to the sides of the trench for the concrete casing.

The proposed Project alignment would be constructed in four distinct sections (A, AB, B, and C). The sections were determined to reflect the differing physical constraints and characteristics imposed by the layout and loads of the planned overbuild structures, along with the location of Amtrak Empire Line Tunnel and the LIRR railroad infrastructure and Maintenance of Equipment Shop (MOE) building.

- **Section A** is adjacent to Eleventh Ave. The Project alignment is deepest in this section and would contain high column loads.
- **Section AB** is currently occupied by shop tracks serving the MOE building and would contain multiple columns for the overbuild structure. These tracks, laid in the 1980s, would be removed and replaced after construction.
- **Section B** is in close proximity to the existing Amtrak Empire Line Tunnel and would also contain multiple columns
- **Section C** is the western end of the Project and the shallowest section of the Project. It is occupied by the LIRR MOE building and would contain multiple high column loads for the overbuild structure. The shop support and inspection shop section of the 1983 MOE building would be demolished along with the adjacent Tenth Avenue access ramp, also dating from the early 1980s.

Sections A, AB, and B would be fully integrated cut-and-cover concrete casing construction. Partial plan and section design drawings are included in Attachment 4, Figures 1 and 2. The construction sequencing would start at Tenth Avenue and head west toward the Eleventh Avenue Viaduct. As the first portion of the Project alignment is completed (approximately 400 feet in length) Overbuild Platform construction will commence over the completed concrete casing.

The anticipated construction sequence is as follows:

1. Fence off construction zone
2. Utility relocations, MOE building partial demolition, Tenth Avenue ramp demolition, yard track removal
3. Secant piling and caisson construction
4. Excavation/bracing
5. Concrete casing construction
6. Backfill

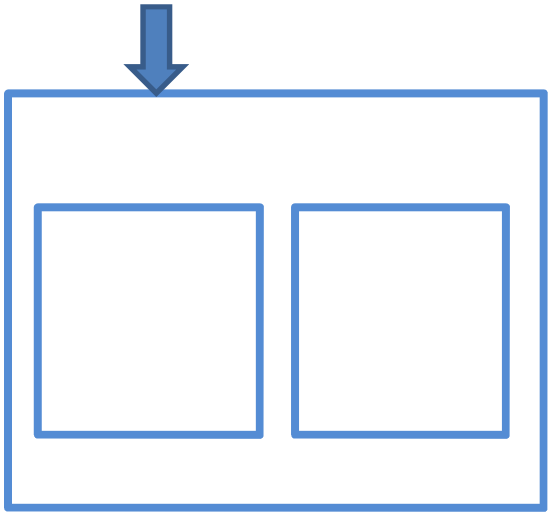
7. Platform foundation construction and crane pad development (after the first 400 feet are constructed), MOE building reconstruction and utility restoration
8. Yard track reconstruction

The initial stage of construction would entail relocations of railroad infrastructure and utilities to accommodate open cut excavation of the deep trench for construction of the concrete casing. In addition, sections of the LIRR MOE building (constructed in 1983) would be demolished along with the adjacent Access ramp off Tenth Avenue (Attachment 4, Figure 3). Installation of support of excavation walls (SOE) would follow. The SOE walls would be secant pile walls toed into rock. Tie back anchors would be used to support the walls. Section B of the concrete casing, which is very close to the Empire Line Tunnel, would require construction of the secant pile wall to cross over and run on the north side of the Empire Line Tunnel.

Mass excavation of the overburden soils would follow installation of SOE walls. The excavation would extend through rock to the concrete casing floor level utilizing controlled blasting techniques. Channel drilling and rock splitting techniques would also be necessary in close proximity to the Empire Line. Pattern rock bolting would be used to temporarily support the rock faces in the trench. Shotcrete would be applied to the rock faces in the trench and lower sections of the secant pile walls to provide an adequately smooth surface to attach the waterproofing fleece and membrane used to waterproof the new concrete casing. The permanent cast-in-place reinforced concrete casing floor, walls and roof would be placed following installation of the waterproof membrane.

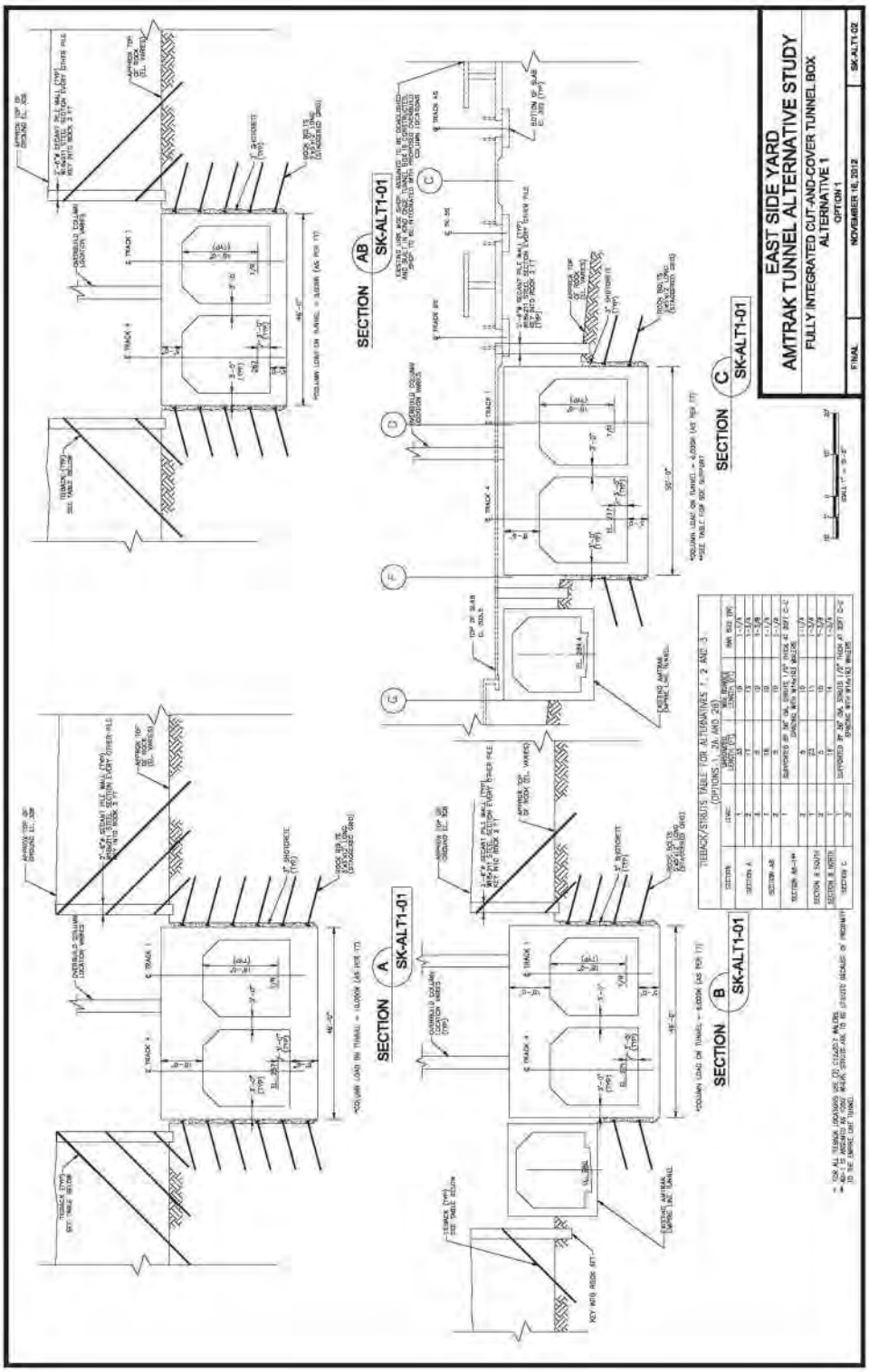
The final stages of construction would entail completing the overbuild column connections to the concrete casing, cutting off the top of the secant pile walls, backfilling the trench and reinstating the utilities and railroad infrastructure.

Overbuild Foundation Load (size & locations vary)



Conceptual Design:
Fully Integrated Casing and Overbuild Foundation Structure

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 4	
SCALE	N/A	URS	**PROJECT NO.** 15303391
SOURCE	Amtrak Gateway Project – Hudson Yards Study, Tutor Perini Corporation/Parson Brinckerhoff, Nov. 16, 2012		**Figure No.** 1



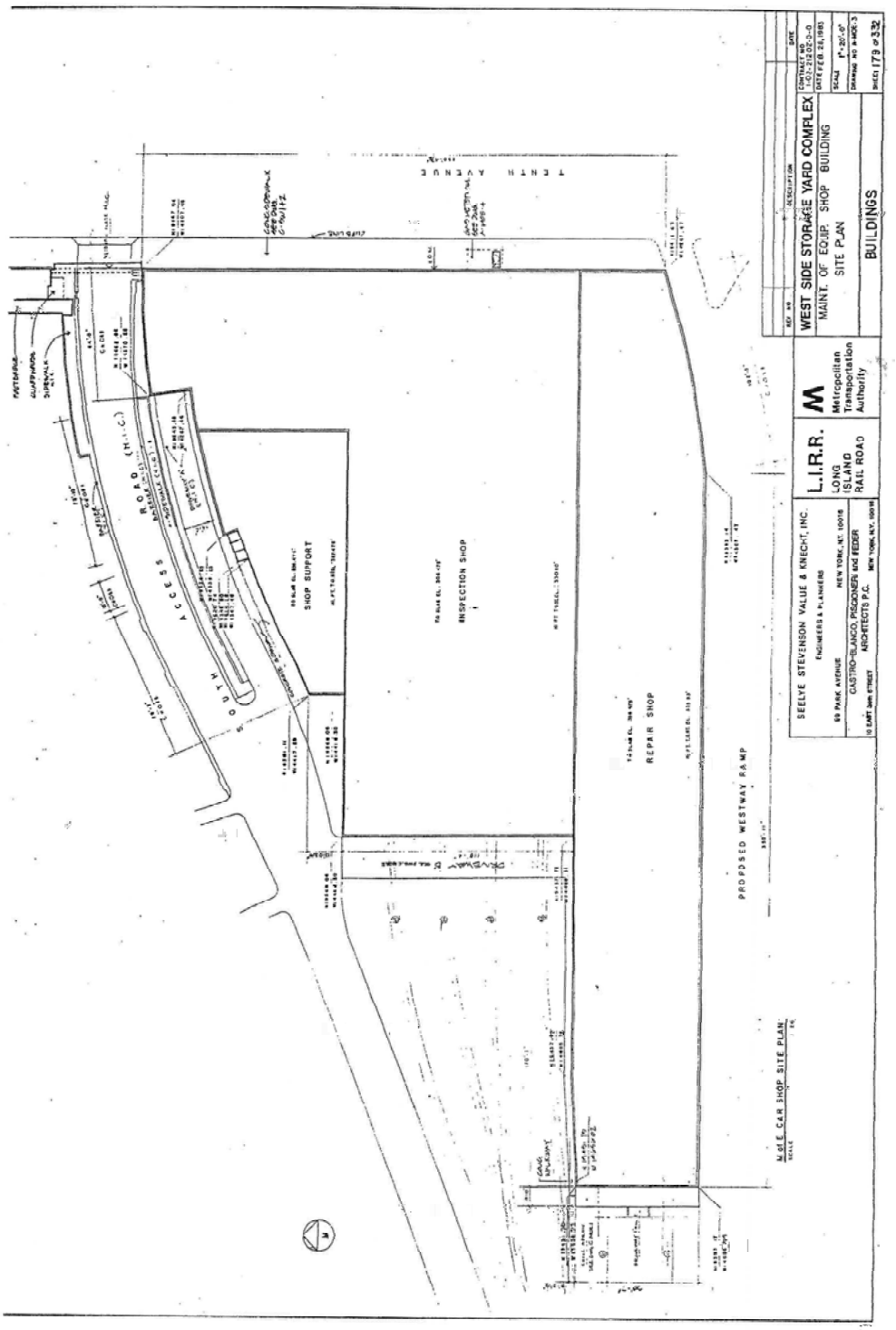
PROJECT	Concrete Casing in the Hudson Yards
SCALE	N/A
SOURCE	Amtrak Gateway Project – Hudson Yards Study, Tutor Perini Corporation/Parson Brinckerhoff, Nov. 16, 2012

Attachment 4

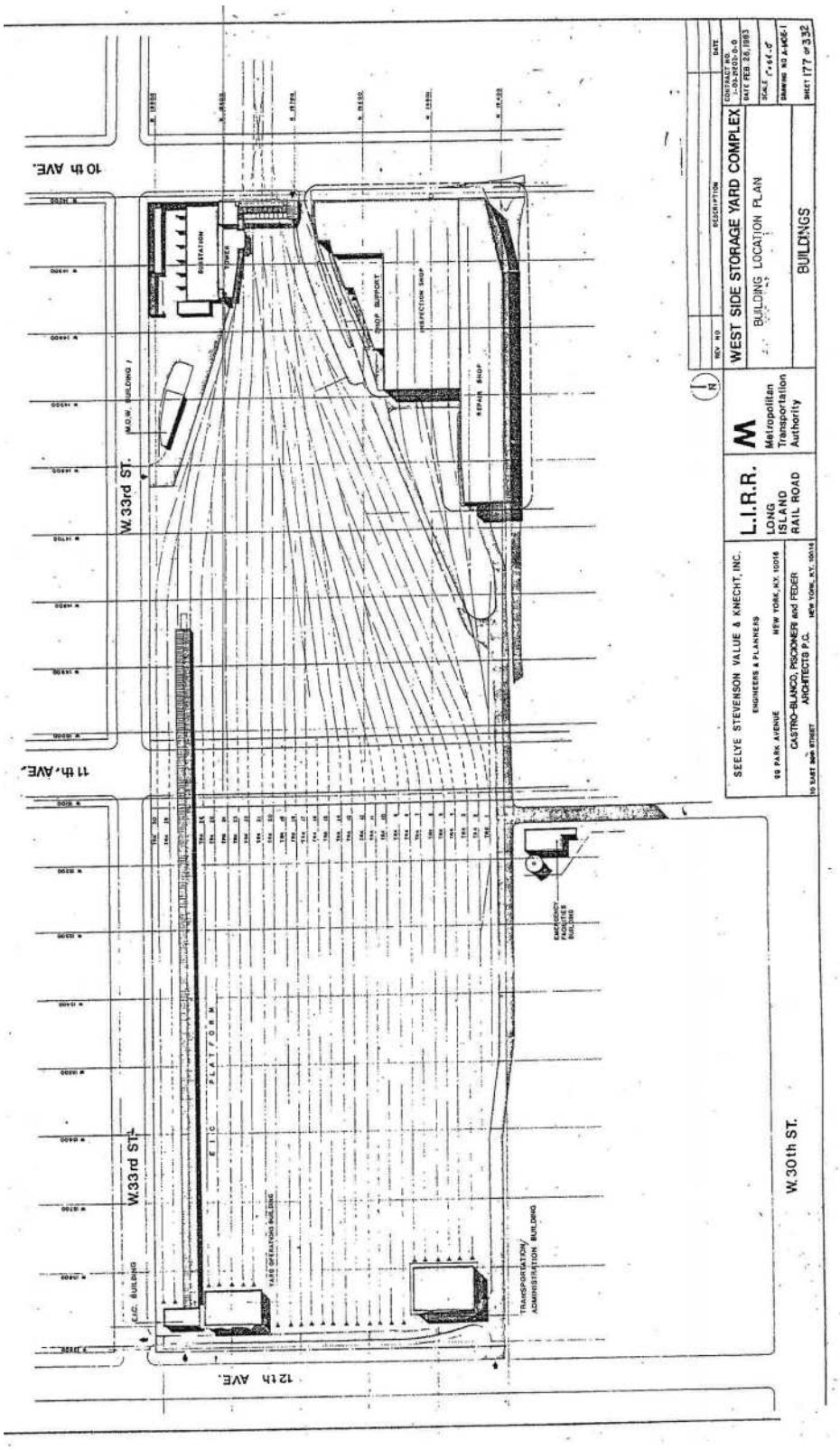
URS

PROJECT NO. 15303391

Figure No. 2



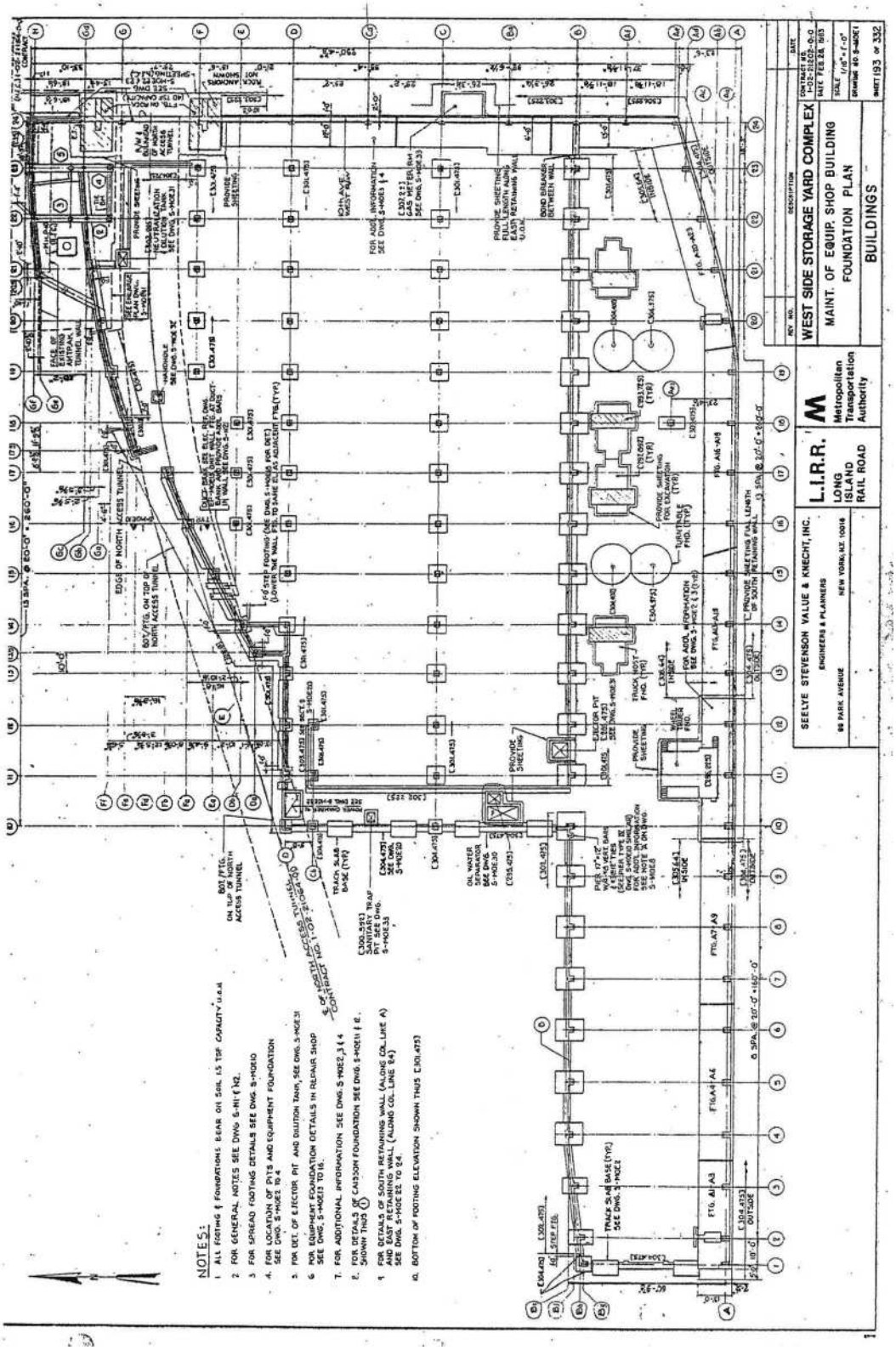
PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 4	
SCALE	N/A		
SOURCE	Amtrak Gateway Project – Hudson Yards Study, Tutor Perini Corporation/Parson Brinckerhoff, Nov. 16. 2012	URS	**PROJECT NO.** 15303391
			Figure No. 3



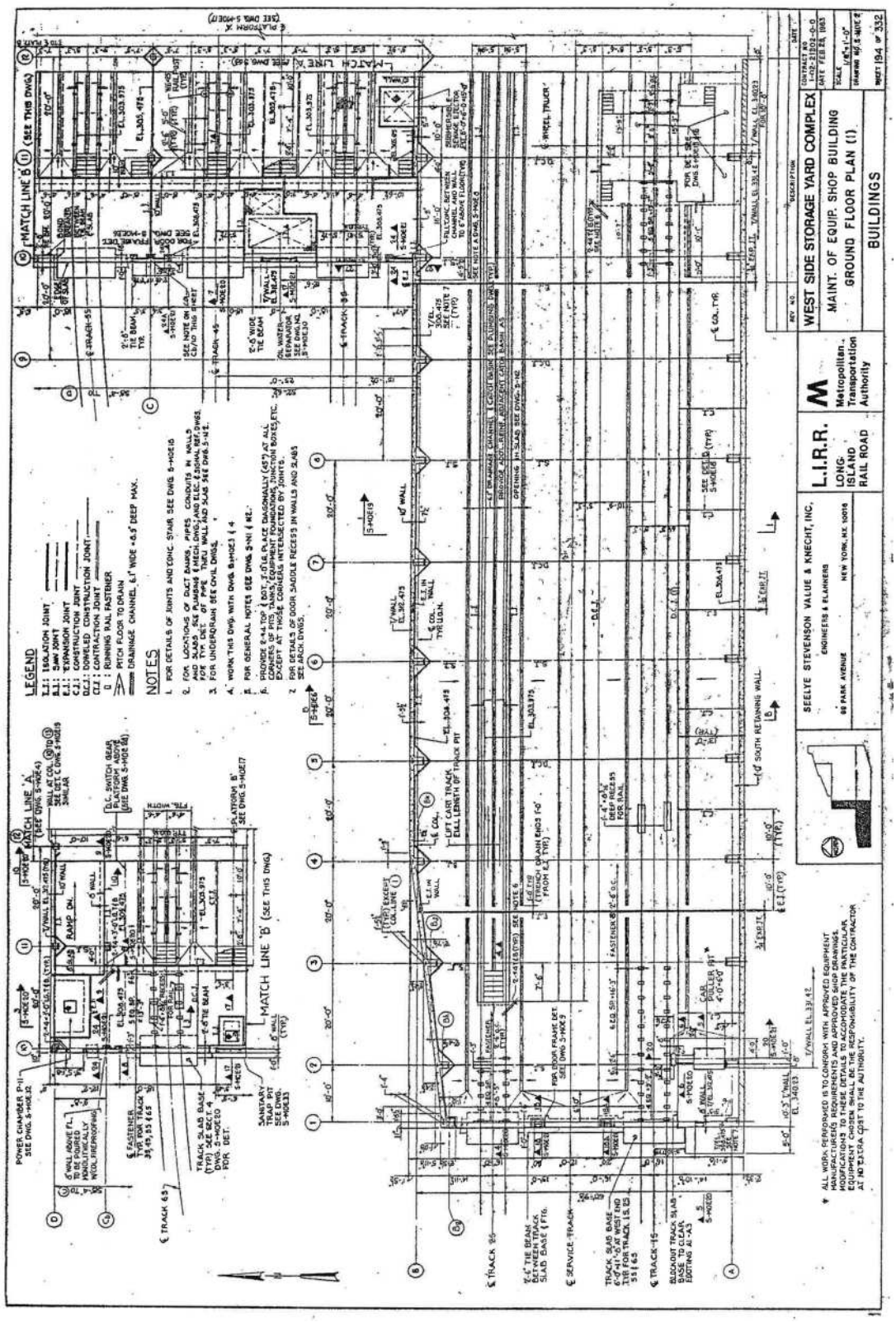
URS

PROJECT NO. 15303391

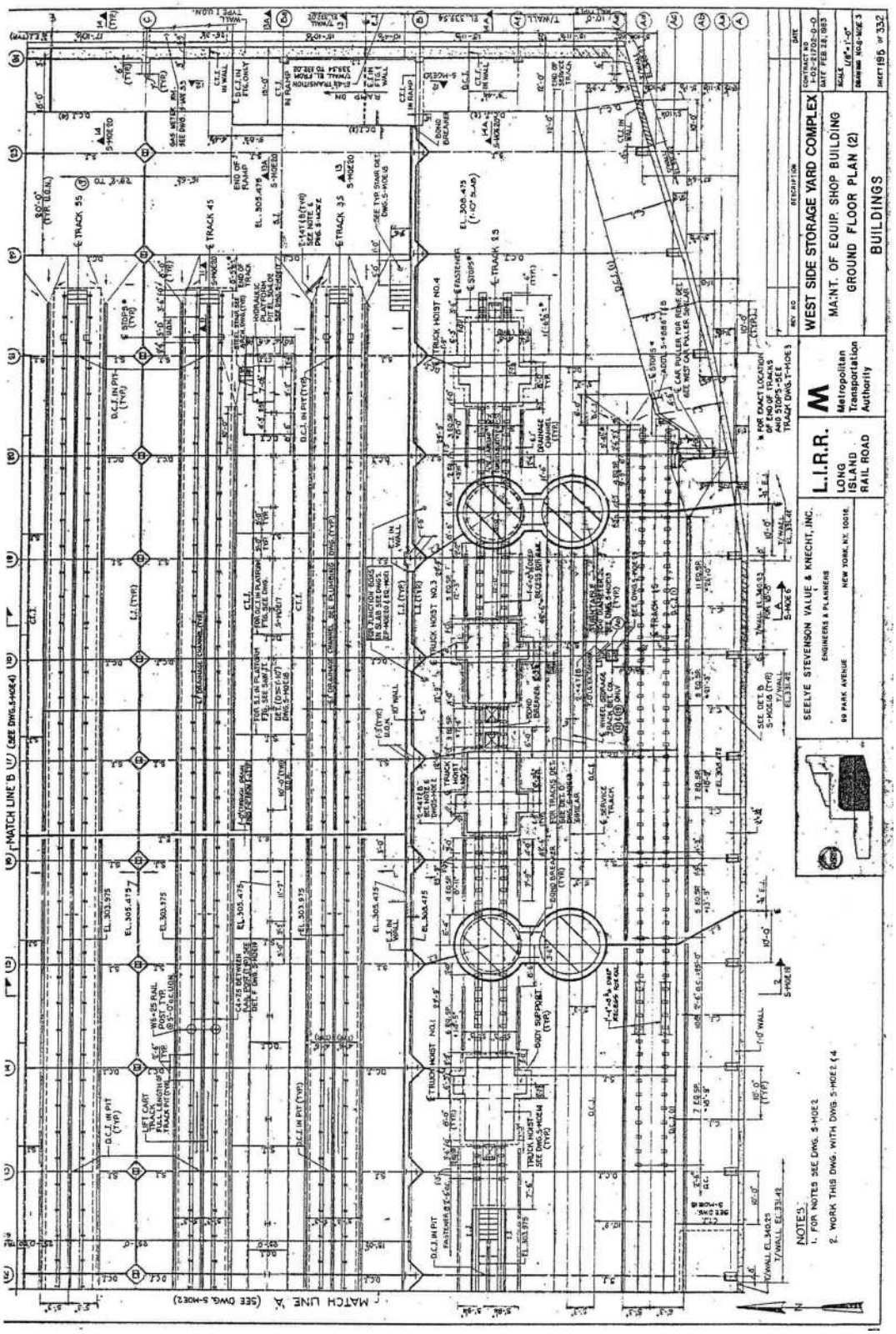
Figure No. 3 (continued)



URS	**PROJECT NO.** 15303391
	Figure No. 3 (continued)



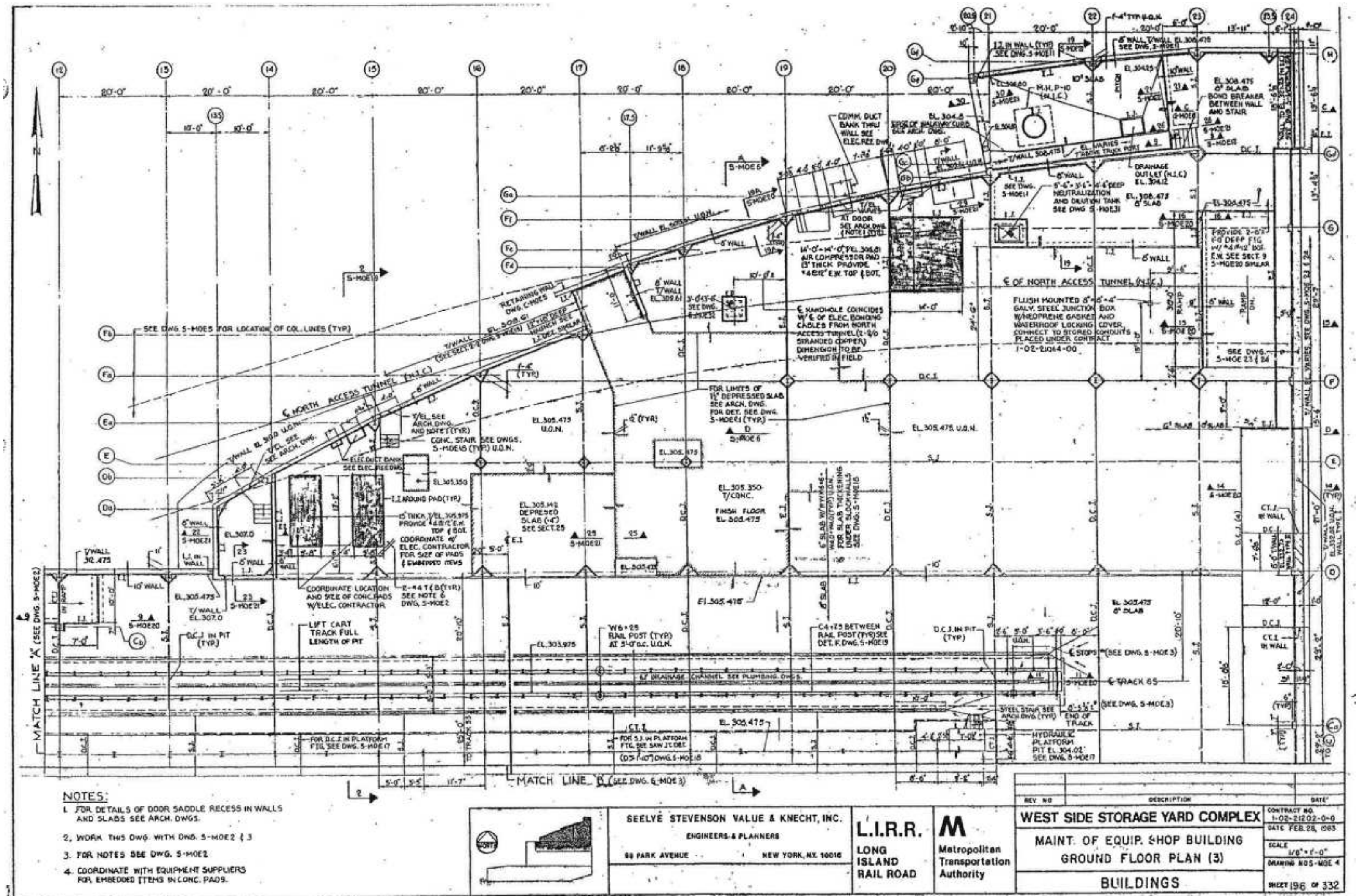
URS	**PROJECT NO.** 15303391
	Figure No. 3 (continued)



URS

PROJECT NO. 15303391

Figure No. 3 (continued)

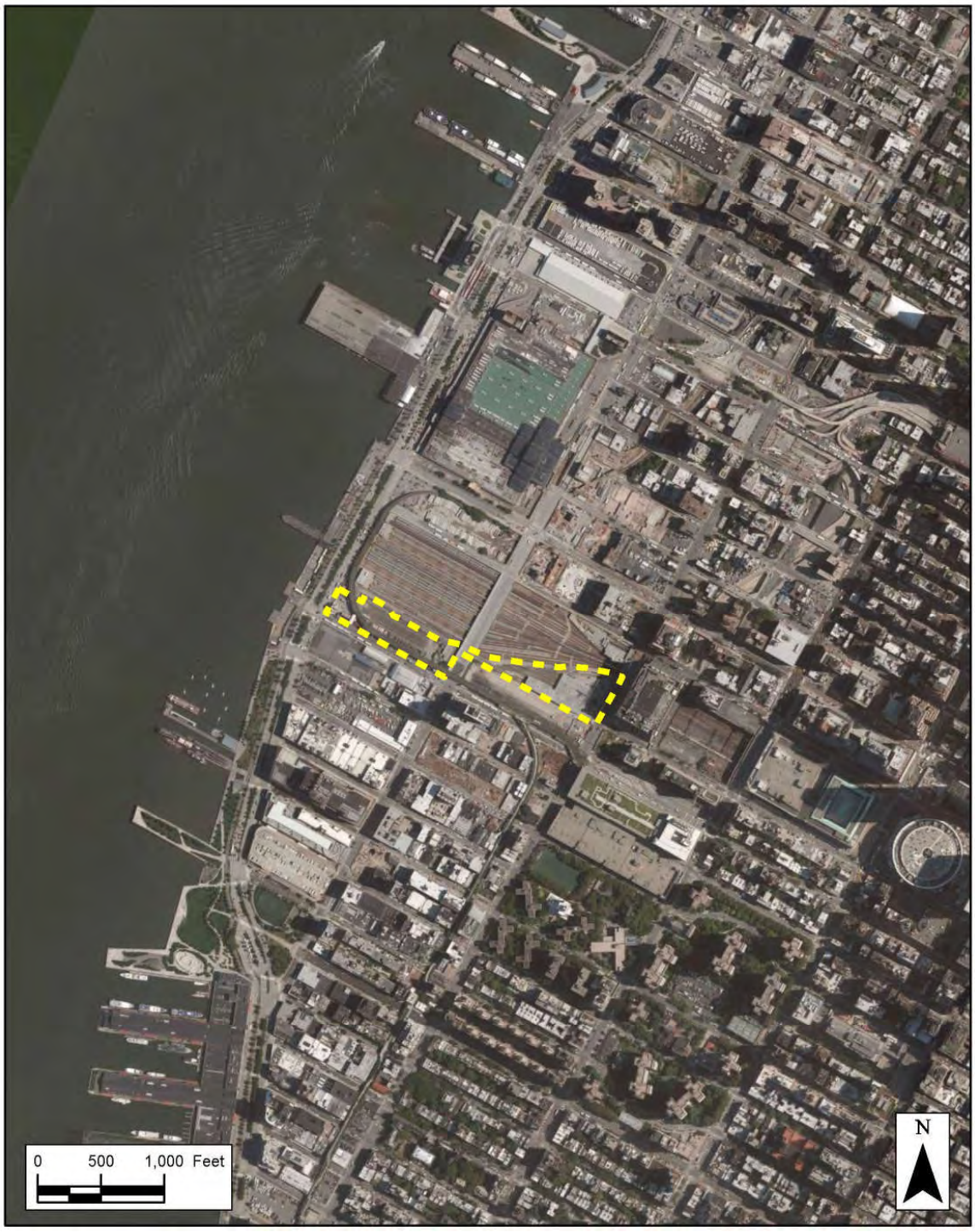


URS

PROJECT NO. 15303391

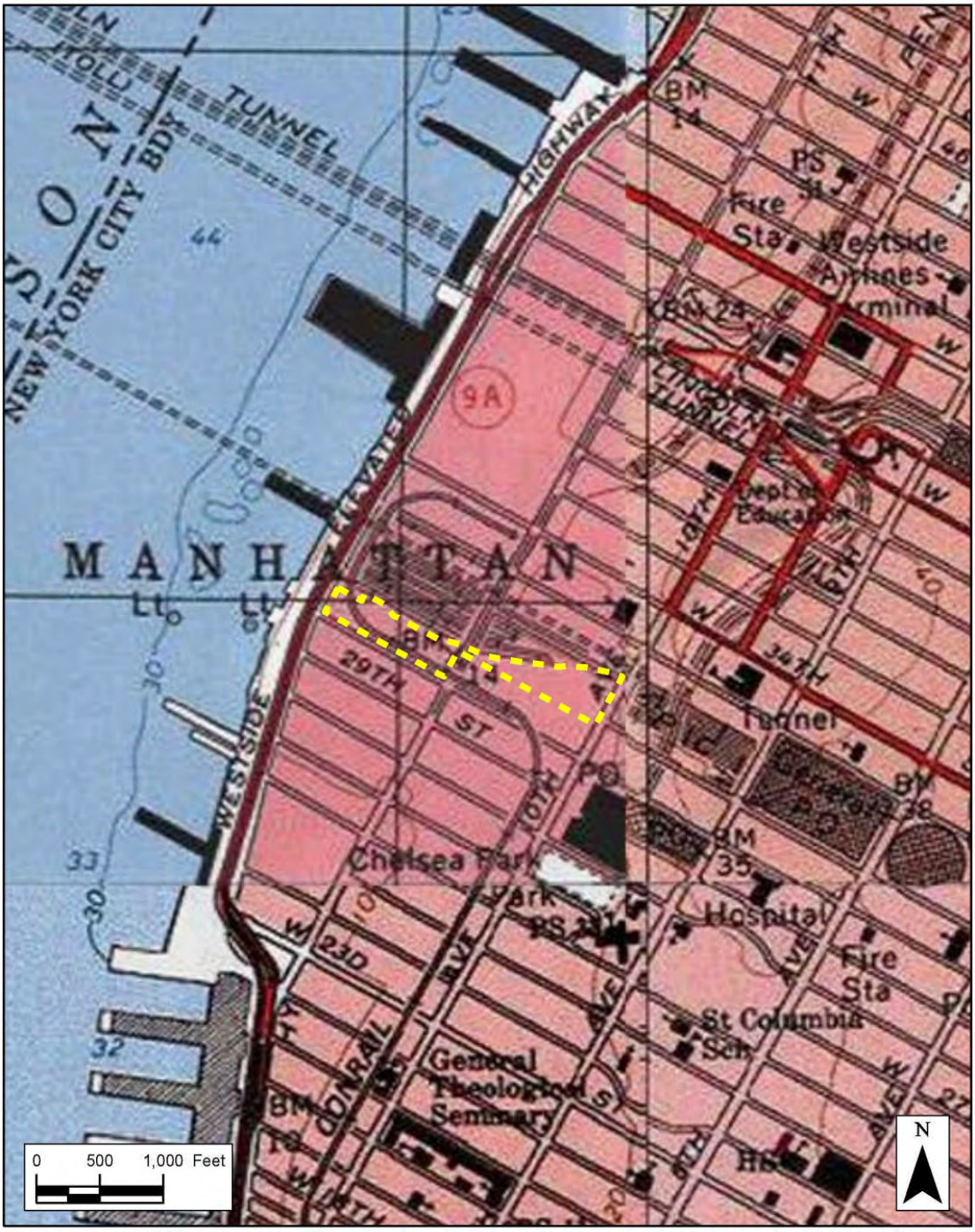
Figure No. 3 (continued)

Attachment 5



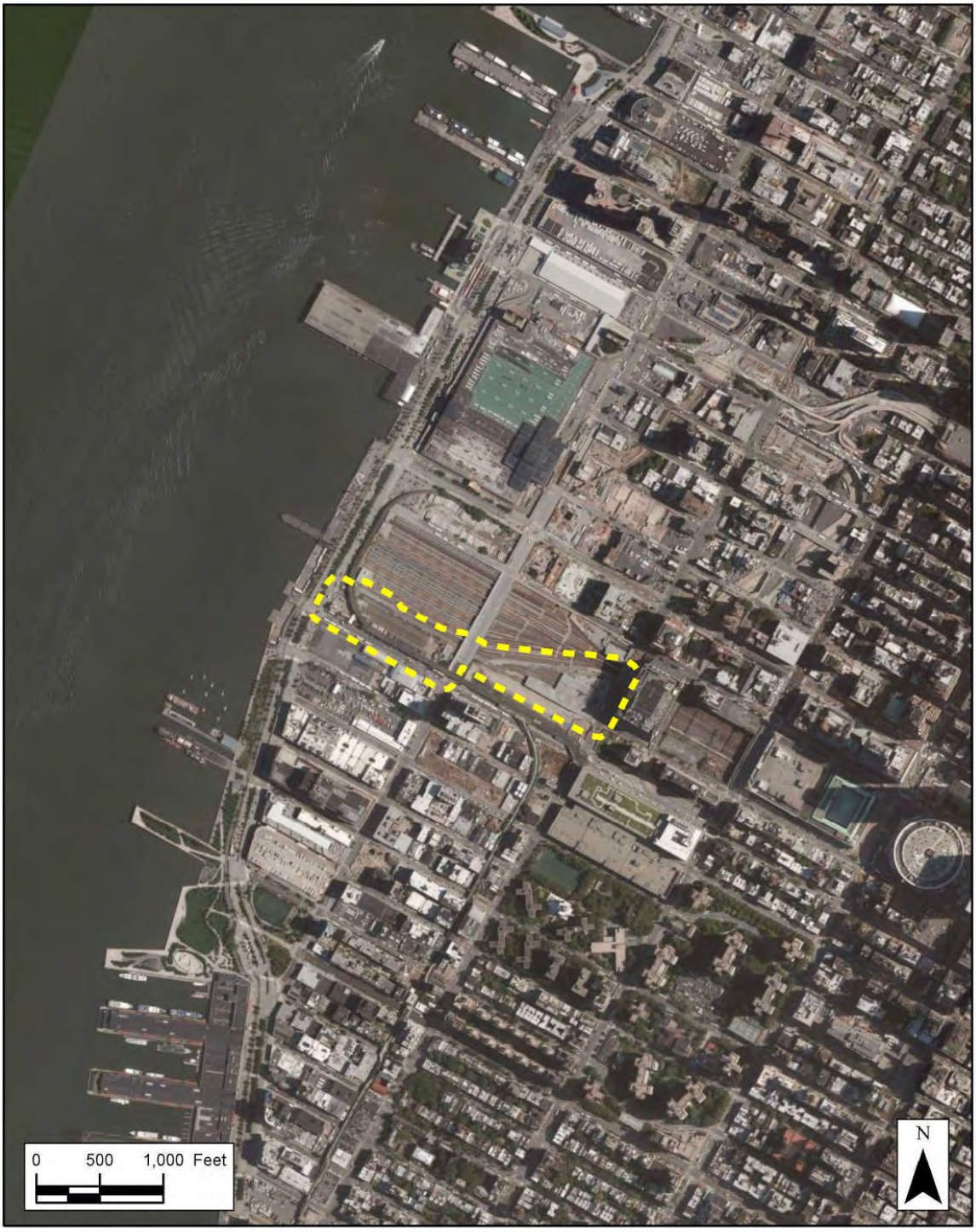
Archaeological APE Satellite Map

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 5	
SCALE	1:12,500	URS	**PROJECT NO.** 15303391
SOURCE	Bing Map Aerial Imagery, Microsoft 2010		**Figure No.** 1



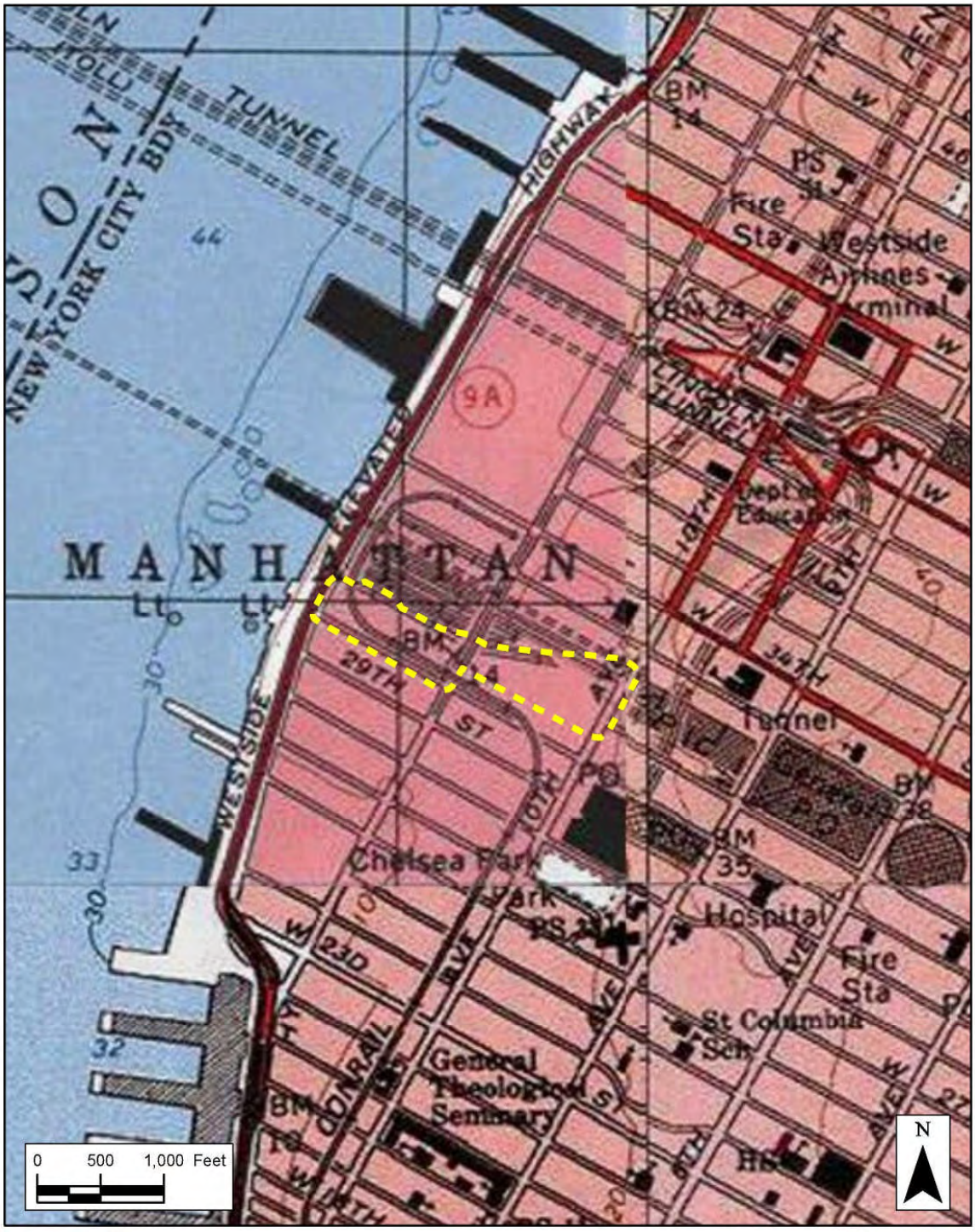
Archaeological APE Topographic Map

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 5	
SCALE	1:12,500	URS	**PROJECT NO.** 15303391
SOURCE	National Geographic TOPO! 2011, USGS		**Figure No.** 2



Above-ground APE Satellite Map

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 5	
SCALE	1:12,500	URS	**PROJECT NO.** 15303391
SOURCE	Bing Map Aerial Imagery, Microsoft 2010		**Figure No.** 3



Above-ground APE Topographic Map

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 5	
SCALE	1:12,500	URS	**PROJECT NO.** 15303391
SOURCE	National Geographic TOPO! 2011, USGS		**Figure No.** 4

Attachment 6

ATTACHMENT 6 – Cultural Resource Information

Amtrak Right of Way Preservation
Concrete Casing in the Hudson Yards
New York City, New York County, NY

Historic Development of Project Area

Throughout the 18th century, the west side of what is now Midtown Manhattan was farmland. In the early 19th century, most of this land was owned by George Rapelje, grandson of Dutch settler, Joris Rapelje, one of the first immigrant workers brought to New Netherlands, as the 17th-century colonial province on the East Coast of North America was known, by the Dutch West India Company. The land in the proposed project area was purchased by the Rapelje family in 1720 from Sir Peter Warren, a British Naval Officer and British Member of Parliament. Later in the century, several additional estates were established around present day 9th Avenue. The area remained largely rural in the early 19th century, consisting of market gardens, estates, and unimproved lands, much of which were owned by the municipal government.

The Rapelje family started selling off development tracts in the 1820s. These tracts had boundaries that conformed to the street and avenue grid system, adopted by the New York Legislature in 1811, but not approved until 1835. Once the grading and filling was completed, the avenues and streets were established north to West 35th Street. Midtown soon became home to German immigrants who came to work on the Croton Aqueduct and wished to escape the crowded conditions of Lower Manhattan.

The *Map of the City of New York and the Island of Manhattan, W. Bridges, 1814*, illustrates that all of the west side of the Hudson Yard was in the Hudson River and approximately the top third of the east side as well. Before the mid-19th century landfill projects, the Hudson River shoreline was located in the project area, near what is now Eleventh Avenue. In 1849, the Hudson River Railroad was completed, terminating in the area between West 34th and West 30th Street and Eleventh Avenue and the Hudson River. When the Hudson River Railroad connected to the New York Central Railroad, the project area attracted industries that relied on the rail system, such as slaughterhouses and meatpackers. Three-to-five story brick tenements were soon constructed by real estate speculators and occupied by the workers in these industries.

An *1865 Sanitary and Topographical Map* shows that the yard west of 11th Street was almost all under water, and the east yard was either made land or marsh. The 1867 *Plan of the City of New York from the Battery to Spuyten Duyvil Creek,* indicates a great deal of land filling and building activity had occurred in the two blocks that contain the proposed project area. A pier in the Hudson River between 33rd and 32nd Streets contains railroad tracks that continue onto the top half of the west yard and curve south into the east yard past a roundhouse and a car shop. Lumber storage, stone yards, coal yards, a limekiln and an iron works surround the two train yard blocks, suggesting the area was principally a freight rail yard for industrial operations.

An *1891 Map of New York City,* by George Bromley (Attachment 6, Figure 1) shows the project area consisting of six blocks that contain commercial and industrial land uses such as a brewery,

iron works, iron forge, coal yard, lumberyards, and sawmill. The New York City and Hudson River Railroad (NYC & HRRR) owned the area between Tenth and Twelfth Avenues, and 30th and 31st Streets. The northern block of the area contained two structures, one of which is labeled "freight depot." The block to the north of this appears to have been vacant. The lower two eastern blocks in the project area are also owned by the NYC & HRRR.

In the late 19th and early 20th centuries, pier development along the Hudson River waterfront continued to spur industrial development in the vicinity of Tenth and Eleventh Avenues. These industrial facilities mixed with existing residential areas in Hell's Kitchen and Chelsea while fostering additional residential development. The 1908 opening of the New York Improvement and Tunnel Extension of the Pennsylvania Railroad, which included tunneling under the Hudson and East Rivers and through Manhattan, connected the Nation's largest port with the Nation's largest railroad, and greatly changed the character of Midtown.

The 1911 Sanborn Maps show the area between West 30th and West 33rd consisting mostly of railroad tracks associated with the recently completed massive improvements to the Pennsylvania Railroad that included tunneling under the nearby Hudson River (Attachment 6, Figures 2 and 3). The subsequent development of the Pennsylvania Station, the U.S. General Post Office, and the 7th Avenue subway sparked major development. The printing and publishing businesses relocated from the City Hall area to the Pennsylvania Station area, attracted by the new post office, rail lines and shipping piers.

Historic Properties Located in the Above-ground APE

Built above-ground properties in the project area include the 1983 LIRR MOE building, (Attachment 6, Figures 4) the 1980s LIRR tracks that service the MOE building, and the Eleventh Street Viaduct, (Attachment 6, Figure 5) constructed in the 1930s. None of these properties are considered historic as they either date to the 1980s yard redevelopment or were substantially altered as part of the 1980s yard development project. The site had been used as rail yards for more than 100 years prior to the 1980s LIRR development. Since 1983, the yard has served as the storage and maintenance facility for LIRR commuter trains.

The MOE building, located within the Work Zone, consists of a repair shop, an inspection shop, and a support shop. This one-story steel-frame structure is on a concrete slab of varying height. Columns are located along the southern wall and support a gantry to lift train cars. A wheel-trueing pit is located approximately 200 feet from the west end of the building. The pit's floor is located 12.25 feet below the slab, or 3.5 feet below grade.

The Eleventh Avenue Viaduct runs from West 30th Street to West 37th Street and was constructed in the 1930s as part of the West Side Improvement project. The viaduct is a steel-frame structure with a reinforced concrete deck. Sections were reconstructed during the West Side Yards redevelopment in the 1980s, including new foundations consisting of driven piles and caissons extending to bedrock. The south viaduct abutment, which extends approximately 150 feet north of West 30th Street, was repaired at the same time, and a new road deck was recently installed.

The 2004 *Final Generic Environmental Impact Statement for the No. 7 Subway Extension-Hudson Yards Rezoning and Development Program* (FGEIS) prepared by the City of New York Planning Commission and the Metropolitan Transportation Authority, identified historic architectural resources within that project's APE, which includes the APE for this concrete casing project. The FGEIS included all properties previously listed, or determined eligible for listing, in the New York State and National Registers (S/NR) located in its project area. In addition, the report identified all properties that were New York City Landmarks and Historic Districts (NYCL), and properties that have been found by the New York City Landmarks Preservation Commission (LPC) to appear eligible for designation, considered for designation ("heard") by the LPC at a public hearing, or scheduled for consideration at such a hearing.

To ensure that any additional archaeological and historic properties identified since the 2004 Hudson Yards FGEIS were considered for this EA, a URS architectural historian undertook research at the New York State Office of Recreation Parks and Historic Preservation (ORPPHP) at Peebles Island, NY, to examine relevant NRHP files and New York State Historic Resource Inventory files. New York State Library records were also researched. On-line research included records from the Library of Congress and the David Rumsey Collection. The URS architectural historian completed research and conducted a site visit during the week of January 14, 2013. Photo-documentation of the APE was completed at the same time.

Potential historic architectural resources for the project area are those that appeared to meet at least one of the four National Register Criteria for Evaluation and were identified based on field survey and through historical documentary research at the New York Public Library and Avery Architectural Library at Columbia University, the Municipal Archives, and the New York City Department of Buildings archives.

This field survey for 2004 FGEIS project included a much larger area than the proposed project area. The survey extended from W. 30th Street north to W. 43rd Street and from Eleventh Avenue to Seventh Avenue in the Garment Center District. Ninety-eight potential properties were identified and submitted to the New York State OPRHP and the LPC for evaluation and determination of NRHP eligibility. None of the identified architectural resources are located within the Project area. The Eleventh Avenue viaduct was not included in this list of 98 resources, although it is within the 2004 FGEIS survey area and was constructed over 50 years ago. Presumably, the authors of the document did not feel the structure met at least one NRHP Criteria, or the structure lacked sufficient historic integrity, as defined by NRHP guidelines.

Infrastructure facilities running underneath the yards, (the yard west of Eleventh Avenue Viaduct and the yard east of the Eleventh Avenue Viaduct) include the Amtrak Hudson River Tunnels and the Empire Line Tunnel. The 1986 Empire Line Tunnel abuts the proposed 800-foot long tunnel mid-length between Eleventh Avenue and Tenth Avenue. The Amtrak Hudson River Tunnels are approximately 60 feet north of the Tenth Avenue end of the Project.

The New York Improvements and Tunnel Extension of the Pennsylvania Railroad was determined eligible for listing in the NRHP in April of 2011 by the New York State OPRHP (Attachment 6, Figure 6).The determination was made for a previous Amtrak Security Enhancement Project (PRJ29112351) Replacement and Upgrading of Fire and Life Safety Supervisory Control and Data Acquisition System, New York City, New York County, New

York, funded by the American Recovery and Reinvestment Act. The Statement of Significance provided by the New York State Office of Parks, Recreation & Historic Preservation (OPRHP) state that

> …the subterranean and subaqueous railroad tracks and tunnels of the New York Improvement and Tunnel Extension of the Pennsylvania Railroad meet Criterion A for transportation history and Criterion C for engineering design. Built between 1903 and 1910, this linear transportation corridor was the largest and most advanced metropolitan railroad project undertaken in the United States at that point in history. Extending from Weehawken, New Jersey, beneath the Hudson River, beneath Manhattan, and under the East River to Long Island City, Queens, the system's engineering represents various construction techniques and designs that met the various needs of the project and the geological conditions.

Character-defining features of the New York Improvement and Tunnel Extension of the Pennsylvania Railroad include the tube with bottom trench shape and the cast iron construction. Another important element are the bore segments every 15 feet to accommodate a screw pile driven into bedrock to stabilize the tunnels, solving the problem of the unstable silt river floor shifting and potentially fracturing the cast iron tube while a train was moving through. Monolithic masonry panels line the tubes, which contain only a single track to prevent derailments and collisions. Walkways on 3 feet high benches run along both sides. These benches were designed to be 1 foot higher than the average Pullman car in order to prevent derailments. The benches are constructed of hollow terra-cotta tiles to accommodate electrical cables, including high-tension and low-tension power lines and telegraph, telephone, and signal wires

The Empire Line Tunnel was constructed in 1986 as part of the overall West Side Yard redevelopment project and is not considered historic.

The above-ground 1934 High Line elevated freight tracks runs west perimeter of the west yard, and over the Access Road needed for the project. The OPRHP determined that this resource was eligible for the State and National Registers on February 20, 2004. The 15-foot Access Road, which is scheduled to be constructed beginning of March 2013 as part of this undertaking, will roughly follow the existing alignment, including going underneath the High Line to connect with Twelfth Avenue.

The High Line was completed by the New York Central Railroad in 1934 to replace an at-grade Tenth Avenue track. The High Line was a key component of the Lower West Side's unparalleled commercial transportation advantages. The 1.45-mile steel and concrete viaduct, abandoned since 1980, is almost 30 feet above grade and runs from Gansevoort Street to West 34th Street, roughly parallel to Tenth Avenue.

The High Line is eligible under Criterion A as a significant transportation structure important to New York City's 20th-century industrial development. The High Line connected the industrial

concerns along its route with regional and national markets. The objective of the High Line was to facilities the movement of raw materials and products in and out of this industrial section of the city. The viaduct passed through or along many industrial buildings. The rise of trucking in the 1950s led to a drop in rail freight on the High Line, and the southernmost portion, between Bank and Clarkson Streets, was torn down in the 1960s. In 1993, the southern section between Bank and Little West Twelfth Street was demolished. In the early 1980s, the northern section of the High Line between West 33th and 35th Streets was demolished for construction of the Jacob K. Javits Convention Center. Despite the removal of these sections, the High Line retains much of its historic integrity and is a visual reminder of one of Manhattan's important industrial transportation corridors.

Character-defining features of the High Line in the project area include the loop track shape around the Caemmerer Yard, and the spur that runs east to Tenth Avenue connecting to a large, double-track platform over the avenue adjacent to the Morgan General Mail Facility. Along West 30th Street the loop track viaduct crosses over Eleventh Avenue on a trestle and then curves northward as it reaches Twelfth Avenue continuing over 33rd Street, where it begins to decline. Along 30th Street, the track and spur have a concrete parapet with recessed panels and square concrete posts between the tubular steel railings.

FRA has evaluated the project area pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR Part 800, "Protection of Historic Properties") and determined the following historic property is located in the Above-ground APE:

> *The High Line Freight Railroad viaduct in the vicinity of Tenth Avenue from Gansevoort Street to W. 34th Street*
>
> *New York Improvement and Tunnel Extension of the Pennsylvania Railroad from NJ to Manhattan to Long Island City, Queens*

Potential for the Presence of Resources in the Archaeological APE

The project area has functioned as a rail yard since the 1860s. Although maps of this period show railroad-related buildings such as a freight depot, car shop and a roundhouse, there has been no indication in the archaeological record of foundations associated with these structures. Beginning in the early 20th century, ground was disturbed in the area with the construction of the New York Improvements and Tunnel Extension of the Pennsylvania Railroad. The four tunnels of the Hudson River Tunnel run through the Hudson Yards east to west, and this massive and unprecedented construction project, created significant ground disturbance in the area. In the 1930s, as part Robert Moses' 1930s West Side Improvement project, Eleventh Avenue, north of 30th Street, was developed as a viaduct over the rail yards, creating even more ground disturbance in the project area.

In the 1980s, the West Side Yard redevelopment created the Caemerer Yards, which also involved substantial construction activity. The project included removal of the existing yard operation tracks and the placement of a concrete slab across the western one-half to two-thirds of the entire yard. The remaining eastern section will filled with ballast. Other areas were paved with asphalt and used for parking and storage. Five new structures were built to support

operations, including the MOE building. The southern abutment of the Eleventh Street Viaduct was repaired and new east-west tracks connecting to Penn Station were then constructed on top of the slab and ballast areas.

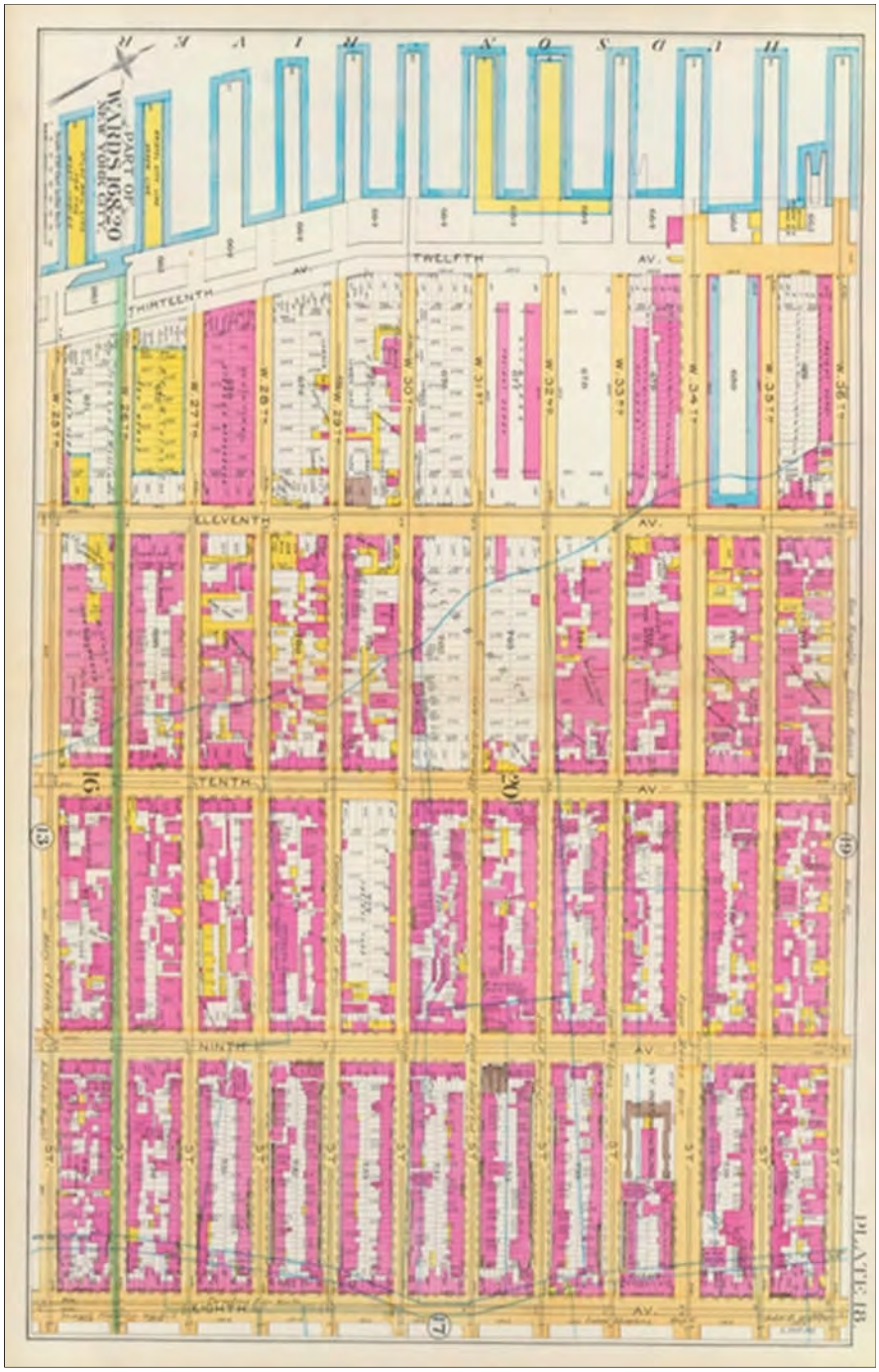
The project area's potential for archaeological resources was previously assessed as part of the 2004 FGEIS for the Hudson Yards Development and 2008 Environmental Impact Statement (EIS) for the West Side Yard. Documentary studies conducted for the FGEIS addressed the possibility of potentially significant historical archaeological resources surviving later disturbances. Information was gathered to compare, both horizontally and vertically, subsurface disturbance record and the historical past.

Documentary studies addressed the possibility that potentially significant historical archaeological resources exist within each APE and the likelihood that such archaeological resources have survived later disturbances. Data were gathered to compare, both horizontally and vertically, the historical past and the subsurface disturbance record. For residential-related archaeological resources, the dates of construction, occupancy, ownership and how old the dwelling was before access to City sewer and water were considered. The likelihood of occupants depending on privies and pits for at least 3 years prior to the advent of municipal sewer and water increased the probability for the presence of associated shafts with the potential for archaeological resources. Based on recommendations from the City's LPC a 10-year period of occupancy by a family or families had to be established for a site to potentially yield historic period resources.

Reference material consulted included collections at the New York Public Library Map Division and Local History Room, the Municipal Archives, the Manhattan Borough President's Office, the Department of Design and Construction's Subsurface Bureau, the City Register's Office, the New York City Department of Environmental Protection's Bureau, the City Register's Office, and the New York City Department of Environmental Protection's Bureau of Sewer and Water Operations (NYC DEP), the New York City Department of Building and the New-York Historical Society. Census Records and City Directories were also consulted, along with records from the New York State OPRHP, the New York State Museum in Albany, and the New York City LPC.

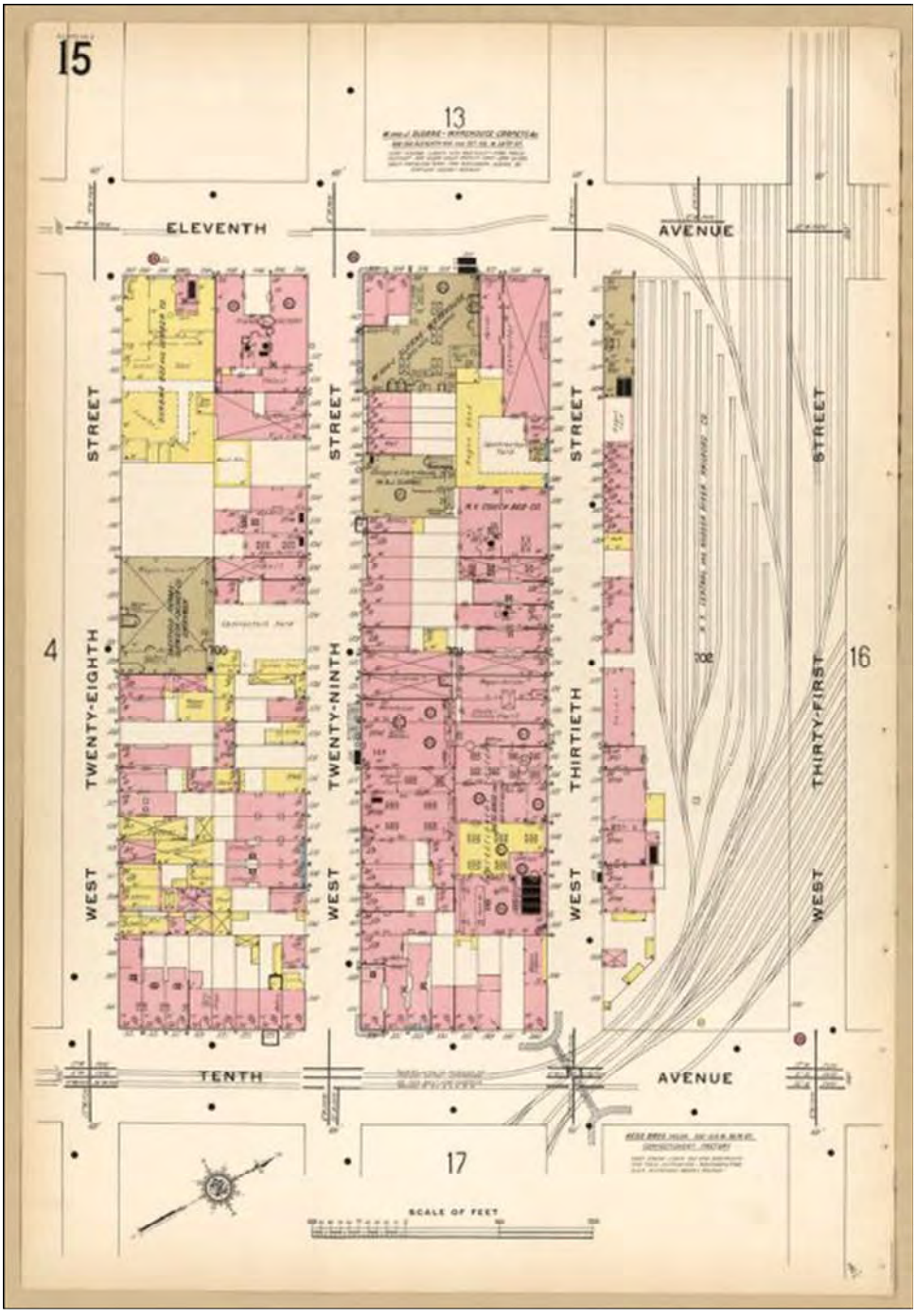
A total of 39 lots and two street beds were evaluated, none of which are on the block bounded by the Twelfth Avenue and Tenth Avenue, and 30th and 33rd Streets, which contains the Work Zone and the Construction Lay-down area for the proposed Project (Attachment 6, Figure 7). Of the 39 lots evaluated, 34 were determined to lack archaeological resource potential due to lack of initial deposition, the inability to associate any occupancy with initial deposits, or subsequence disturbance to compromised integrity. The New York State OPRHP review of the FGEIS archaeological assessment concluded that they had no further archaeological concerns with the No. 7 Subway Extension-Hudson Yards Rezoning and Development Program.

Conclusions from the West Side Yard EIS archaeological resource evaluation were similar to the results of the FGEIS assessment for archaeological potential. The New York State OPRHP and the New York City LPC determined the development site had no archaeological sensitivity.

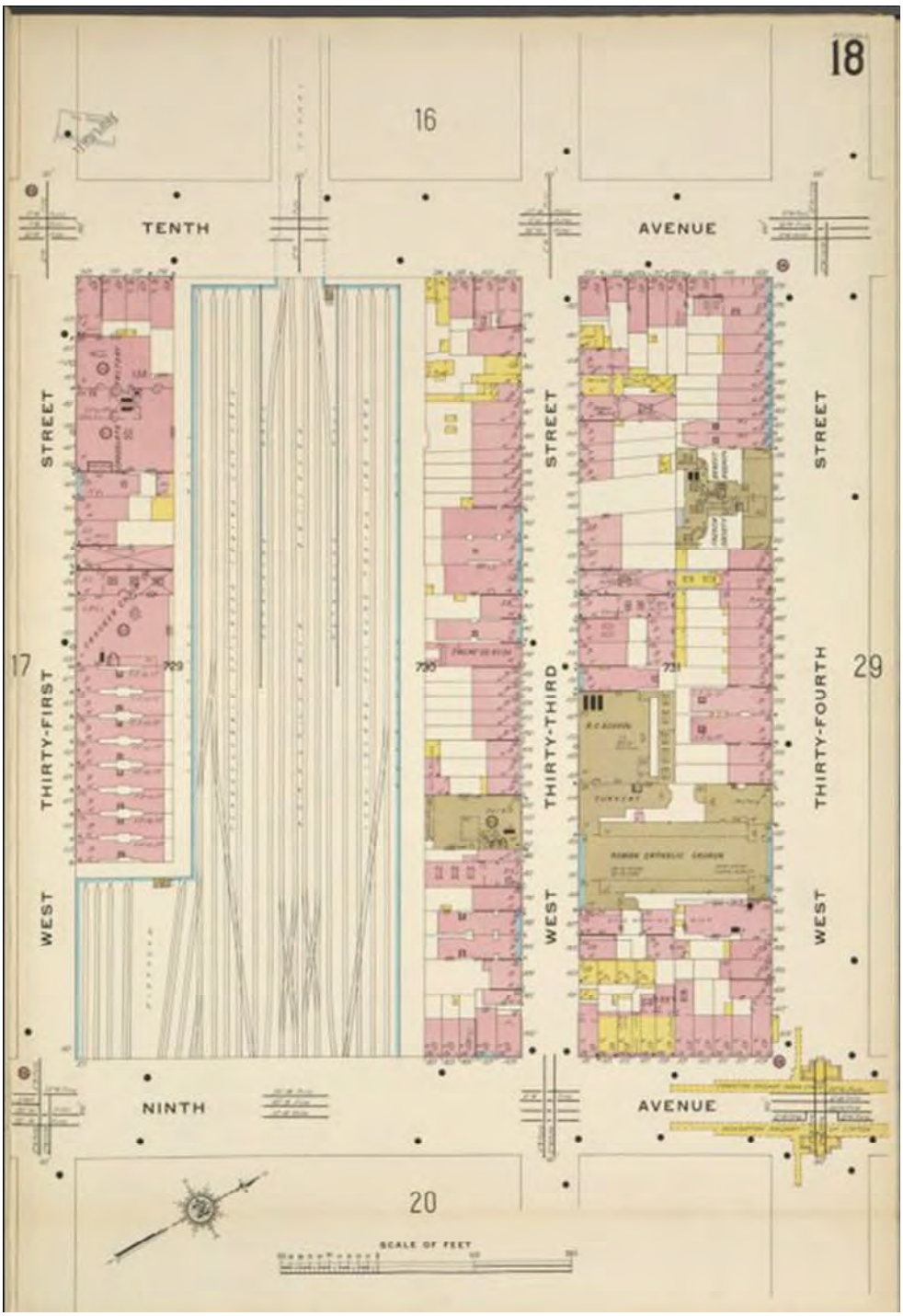


Outline and Index Map of New York City. Manhattan Island. Plate 18.

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 6
SCALE	1:21,600	URS / **PROJECT NO. 15303391**
SOURCE	http://www.davidrumsey.com/	**Figure No.** 1

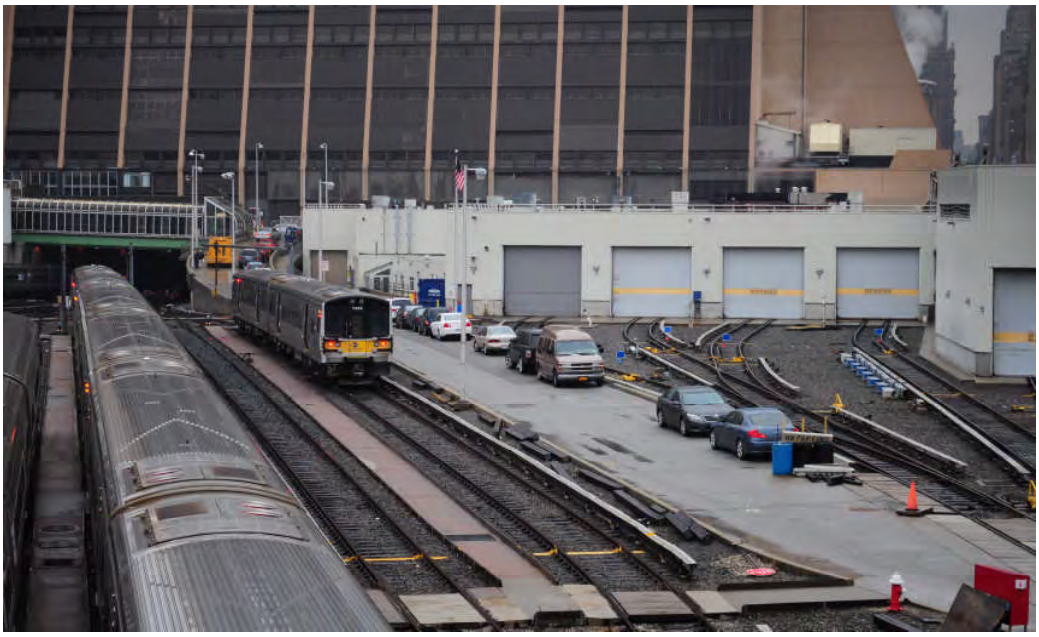


PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 6	
SCALE	1:100	URS	**PROJECT NO.** 15303391
SOURCE	Library of Congress		**Figure No.** 2



PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 6	
SCALE	1:100	URS	**PROJECT NO.** 15303391
SOURCE	Library of Congress		**Figure No.** 3

MOE Building Looking South from 33rd Street



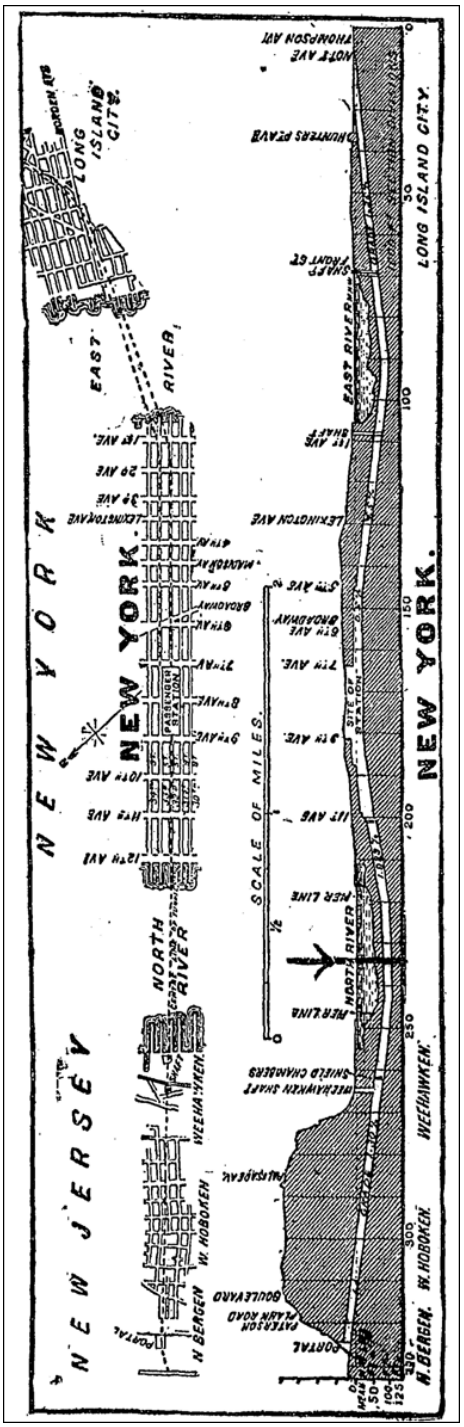
MOE Building Looking East from Eleventh Avenue Viaduct

PROJECT Concrete Casing in the Hudson Yards	**Attachment** 6	
SCALE N/A	URS	**PROJECT NO.** 15303391
SOURCE URS		**Figure No.** 4

Eleventh Avenue Viaduct Looking South and West

High Line and Access Road to Twelfth Avenue, Looking West

PROJECT	Concrete Casing in the Hudson Yards	**Attachment** 6	
SCALE	N/A	URS	**PROJECT NO.** 15303391
SOURCE	URS		**Figure No.** 5



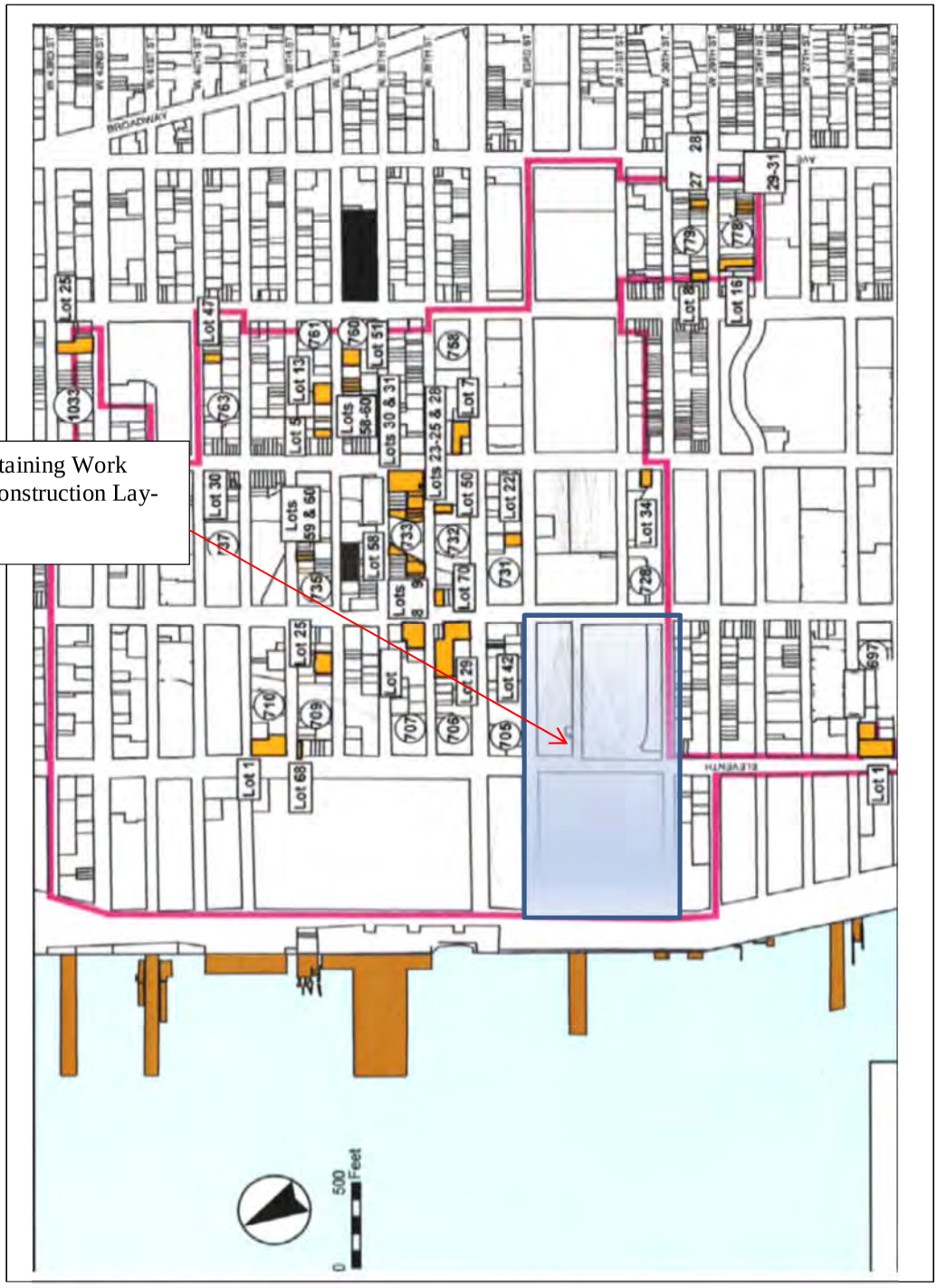
PROJECT	Concrete Casing in the Hudson Yards
SCALE	1:1 Mile
SOURCE	"Penny's North River Tunnel a Marvel of Skill"- New York Times, Sept. 9 1906.

Attachment 6

URS

PROJECT NO. 15303391

Figure No 6



PROJECT Concrete Casing in the Hudson Yards	**Attachment** 6	
SCALE .75:500	URS	**PROJECT NO.** 15303391
SOURCE No. 7 Subway Extension – Hudson Yards Redevelopment and Zoning Program FGEIS, 2004.		**Figure No.** 7